

Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (CURRENTLY AMENDED) A method for determining the frequency of current ripples contained in the armature current signal of a commutated direct current (DC) motor, the method comprising:

determining a frequency spectral result of the armature current signal;

determining a frequency spectral result of an electric operating parameter of the motor;

determining a frequency spectral result of the current ripples contained in the armature current signal ~~subtracting based on differences between~~ the frequency spectral result of the armature current signal and the frequency spectra result of the motor electric operating parameter ~~from one another to determine the frequency spectral result of the current ripples contained in the armature current signal;~~ and

determining current ripple frequency from the frequency spectral result of the current ripples contained in the armature current signal.

2. (ORIGINAL) The method of claim 1 wherein the armature current signal is an analog armature current signal, the method further comprising:

digitizing the analog armature current signal;

wherein determining the frequency spectral result of the armature current signal includes determining the frequency spectral result of the digitized armature current signal.

3. (ORIGINAL) The method of claim 1 wherein:

determining the frequency spectral results of the armature current signal and the motor electric operating parameter includes using a fast Fourier transform on the armature current signal and the motor electric operating parameter to determine the frequency spectral results of the armature current signal and the motor electric operating parameter.

4. (ORIGINAL) The method of claim 1 wherein:

the motor electric operating parameter is the armature voltage signal.

5. (ORIGINAL) The method of claim 1 wherein:

the motor electric operating parameter is the armature current signal at a different motor operating state than the motor operating state of the armature current signal used in the step of determining the frequency spectral result of the armature current signal.

6. (ORIGINAL) The method of claim 1 wherein:

the current ripple frequency is determined during a start-up phase of the motor.

7. (ORIGINAL) The method of claim 1 further comprising:

determining rotational speed of a drive shaft of the motor based on the current ripple frequency; and

determining rotational position of the drive shaft based on the rotational speed of the drive shaft.

8. (CANCELLED)

9. (ORIGINAL) The method of claim 7 further comprising:

monitoring the current ripple frequency for changes during the operation of the motor.

10. (ORIGINAL) The method of claim 9 further comprising:

counting the current ripples contained in the armature current signal; and

modifying the number of counted current ripples as a function of a change in the current ripple frequency during the operation of the motor.

11. (NEW) A method for determining the frequency of current ripples contained in the armature current signal of a commutated direct current (DC) motor, the method comprising:

determining a frequency spectral result of the armature current signal;
determining a frequency spectral result of an electric operating parameter of the motor;

determining a frequency spectral result of the current ripples contained in the armature current signal based on differences between the frequency spectral result of the armature current signal and the frequency spectra result of the motor electric operating parameter without filtering any of the frequency spectral results of the armature current signal and the motor electric operating parameter; and

determining current ripple frequency from the frequency spectral result of the current ripples contained in the armature current signal.

12. (NEW) The method of claim 11 wherein the armature current signal is an analog armature current signal, the method further comprising:

digitizing the analog armature current signal;
wherein determining the frequency spectral result of the armature current signal includes determining the frequency spectral result of the digitized armature current signal.

13. (NEW) The method of claim 11 wherein:

determining the frequency spectral results of the armature current signal and the motor electric operating parameter includes using a fast Fourier transform on the armature current signal and the motor electric operating parameter to determine the frequency spectral results of the armature current signal and the motor electric operating parameter.

14. (NEW) The method of claim 11 wherein:

the motor electric operating parameter is the armature voltage signal.

15. (NEW) The method of claim 11 wherein:

the motor electric operating parameter is the armature current signal at a different motor operating state than the motor operating state of the armature current signal used in the step of determining the frequency spectral result of the armature current signal.

16. (NEW) The method of claim 11 wherein:

the current ripple frequency is determined during a start-up phase of the motor.

17. (NEW) The method of claim 11 further comprising:

determining rotational speed of a drive shaft of the motor based on the current ripple frequency; and

determining rotational position of the drive shaft based on the rotational speed of the drive shaft.

18. (NEW) The method of claim 17 further comprising:

monitoring the current ripple frequency for changes during the operation of the motor.

19. (NEW) The method of claim 18 further comprising:

counting the current ripples contained in the armature current signal; and

modifying the number of counted current ripples as a function of a change in the current ripple frequency during the operation of the motor.